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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,107	11/29/2001	Desmond R. Lim	MIT8926	3629

7590 07/29/2004

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EXAMINER	
FERGUSON, LAWRENCE D	
ART UNIT	**PAPER NUMBER**
1774	

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,107	LIM ET AL.	
	Examiner	Art Unit	
	Lawrence D Ferguson	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 29* is/are pending in the application.

4a) Of the above claim(s) *15-28 and 30-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment mailed May 17, 2004. Claims 1 and 29 are amended rendering claims 1-14 and 29 pending, with claims 15-28 and 30-44 held to a non-elected invention.

Claim Rejections – 35 USC § 103(a)

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830).

Scalora discloses an optical device (column 2, lines 50-53) comprising a plurality of layers, whereby the layers alternate between low and high index of refraction (column 5, lines 1-10). The reference discloses the material is a conductor of electricity (column 7, lines 50-67) and subsequently heat. Scalora discloses band gaps and their widths (column 5, lines 1-59). The reference discloses an index difference between two index layers greater than 0.3 (column 5, lines 32-35). In claim 1, '...formed by creating alternating layers of said plurality of high index layers and said plurality of low index

layers' is directed to a product by process claim limitation. In claim 9, '...form tunneling junctions between said plurality of high index layer and said low index layers' is deemed to be a product by process claim limitation along with '...fabricated by sputtering said alternating layers' in claim 11. The claim language, '...fabricated by bonding,' '...fabricated by utilizing smart cut technique,' and 'fabricated by utilizing polishing technique' of claims 11-14 are deemed to be product by process claim limitations "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966. In claims 7 and 8, '...ensure that the loss in said optical device will be due to scattering off carriers' and '...exhibit low absorption losses' constitutes a 'capable of' limitation and that such a recitation that a device is 'capable of' performing a function is not a positive limitation, but only requires the ability to so perform. Although Scalora does not explicitly teach the plurality of high and low index layers having a relationship, $E_{g,l} > E_{g,h} > hc/\lambda$, this relationship is an inherent feature of Scalora's optical device. Mere recitation of a newly-discovered function or property, inherently possessed by things in prior art, does not cause a claim drawn to those things to distinguish over prior art. The Patent Office can require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on where it has reason to believe that functional limitation asserted

to be critical for establishing novelty in claimed subject matter may be inherent characteristic of prior art.

Claim Rejections – 35 USC § 103(a)

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830) in view of Knapp et al (U.S. 6,077,569).

Scalora is relied upon for claims 1-2 and 6-14. Scalora does not disclose Indium Tin Oxides, doped diamonds or silicon. Knapp teaches an optical device comprising alternating layers of high refractive index and low refractive index, where the refractive indices includes indium tin oxide, silicon and diamond materials (column 1, line 34 through column 2, line 9). Scalora and Knapp are analogous art because they are both from the field of optical devices. It would have been obvious to one of ordinary skill in the art to include indium tin oxide, silicon and diamond material in the high index layers of Scalora because Knapp teaches the material provides additional abrasion protection and barrier properties (column 4, lines 11-16).

Claim Rejections – 35 USC § 103(a)

5. Claims 1-2 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scalora et al (U.S. 6,343,167) in view of Duck et al. (U.S. 5,615,289).

Scalora discloses an optical Fabry-Perot device having a band gap structure comprising alternating layers of refractive materials having first and second index of refractions (column 2, lines 8-37) where one layer has an index of refraction of about 3.4 and the adjacent layer has an index of refraction of about 2.9 (column 8, lines 15-24) which results in a difference of 0.5. The claim language, '...allow electricity and heat to be conducted' constitutes a 'capable of' limitation and that such a recitation that a device is 'capable of' performing a function is not a positive limitation, but only requires the ability to so perform. Although Scalora does not explicitly teach the plurality of high and low index layers having a relationship, $E_{g,l} > E_{g,h} > hc/\lambda$, this relationship is an inherent feature of Scalora's Fabry Perot device. Mere recitation of a newly-discovered function or property, inherently possessed by things in prior art, does not cause a claim drawn to those things to distinguish over prior art. The Patent Office can require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on where it has reason to believe that functional limitation asserted to be critical for establishing novelty in claimed subject matter may be inherent characteristic of prior art. Scalora does not explicitly teach the Fabry-Perot device having mirrors and a cavity.

Duck discloses a Fabry Perot device comprising alternating high and low index regions (abstract and column 1, lines 48-60) including at least two reflectors (mirrors) comprising cavities comprising selective materials (column 1,lines 52-67). Scalora and Duck are analogous art because they are both directed to Fabry Perot devices. It would have been obvious to one of ordinary skill in the art to include the reflectors (mirrors)

comprising cavities with selective materials in the Fabry Perot device of Scalora to reduce the transmission ripple of the device (column 1, lines 50-51).

Response to Arguments

6. Arguments to rejection made under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830) have been considered but are unpersuasive. Applicant argues Scalora does not teach limiting its alternating high and low index materials having the relationship $E_{g,l} > E_{g,h} > hc/\lambda$. Although Scalora does not explicitly teach the plurality of high and low index layers having a relationship, $E_{g,l} > E_{g,h} > hc/\lambda$, this relationship is an inherent feature of Scalora's optical device. Mere recitation of a newly-discovered function or property, inherently possessed by things in prior art, does not cause a claim drawn to those things to distinguish over prior art. Applicant further argues Scalora focuses on the thickness of the low index material layers as a way to tune its transparent window over a wide range of frequencies, which is contrary to what the invention, as recited in claim 1, uses to provide an optical device that can also be thermally and electrically conductive. Applicant is arguing the intended use of the instantly claim application, which is given little patentable weight. Applicant argues claims 2 and 6-14 are allowable as they are dependent upon claim 1. Because claim 1 has been maintained as obvious over instant claim 1, dependent claims 2 and 6-14 remain rejected for reasons of record. Applicant argues Scalora '830 does not describe the index difference between the plurality of high index layers and plurality of low index

layers is greater than 0.3. Scalora '830 discloses an index difference between two index layers greater than 0.3 (column 5, lines 32-35).

Arguments to rejection made under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830) in view of Knapp et al (U.S. 6,077,569) have been considered but are unpersuasive. Applicant argues Knapp does not address the deficiencies of Scalora and therefore does not render claims 3-5 unpatentable. Because Scalora has been maintained as being obvious over instant claim 1, Knapp et al is maintained for reasons of record.

Arguments to rejection made under 35 U.S.C. 103(a) as being unpatentable over Duck et al. (U.S. 5,615,289) are moot based on grounds of new rejection under Scalora' 167.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence D. Ferguson
Examiner
Art Unit 1774